

WHAT IS CLAIMED IS:

1. A method for in-line heat treating of steel stock hot rolled in a rolling mill, comprising the steps, conducted in-line with the rolling mill, of:

a. cutting the rolled stock into pieces of predetermined length;

b. quenching the pieces of hot rolled stock in a quenching box;

c. in preparation for tempering of the quenched stock, preparing at least one layer of a predetermined number of cut pieces of stock in a layers preparation zone, with use of a layers preparation system, wherein the number of cut pieces of stock per layer depends on the section of the rolled stock;

d. tempering the prepared layer(s) of stock arranged in one or more level(s) in an on-line annealing furnace for controlled cooling, holding or heating of the layer(s) of stock;

e. separating and discharging the layer(s) from the one or more level(s) into individual pieces of quenched and tempered stock with use of a separating and discharging device, and

f. cooling the quenched and tempered stock in a cooling bed.

2. A method according to claim 1, wherein the pieces of hot rolled stock coming from the quenching box have a temperature in the range 50 to 150 °C.

3 A method according to claim 1, wherein tempering takes place while holding the layers of stock at a temperature in the range 500 to 700°C for a time about 60 minutes to about 120 minutes.

4. A method according to claim 1, further comprising the step of induction heating the rolled and quenched stock in-line before preparing layers to help the following tempering of the rolled stock in the annealing furnace.

5. A method according to claim 1, wherein cooling in the quenching box is started from a temperature of about 800°C.

6. A method according to claim 1, further comprising a subsequent in-line finishing step selected from the group consisting of final cooling in a water box, shotblasting, cutting to final form, and packaging.

7. A method according to claim 1, wherein the cooling bed is provided with a protective atmosphere.

8. A method according to Claim 1, wherein the number of levels in the on-line annealing furnace is two or more.

9. A method according to Claim 1, wherein
said layers preparation system in said layers preparation zone
is positioned inside the on-line annealing furnace, and
said separating and discharging device is positioned inside
the on-line annealing furnace.

10. A method according to Claim 1, wherein said layers
preparation system in said layers preparation zone is positioned
outside the on-line annealing furnace, and
said separating and discharging device is positioned outside
the on-line annealing furnace.